

sf/aw
6.9.8.1

MEMORANDUM

Date: September 27, 1999
To: Jim Steffanoff,
From: John A. Riley, Hydrogeologist
Subject: Comments on Draft Hydrologic Evaluation of Kellogg Tunnel and South Fork Cd'A River



General comments: 1.) Sections 2 and 3 were quite convincing that there is little or no relation between KT and South Fork discharges. However, it is not clear whether the data that were developed in those sections were used in the subsequent analyses.

2.) It is unclear why the routing analysis is being conducted at this time. Several source control options are being discussed. Presumably, source control measures will change the recharge-discharge dynamics of the mine, and, consequently, the design requirements of the new treatment plant. It would seem more desirable to postpone this effort until the impacts of source control are known.

Specific comments:

Table 2: First location probably is Elizabeth *Park*.

Section 2.3, 3rd paragraph: Several approaches were utilized to develop synthetic hydrographs. Are there any general guidelines regarding which approach is most reasonable? What are the physical characteristics of basins to which each approach is applied? What are the mathematical assumptions underlying each approach, and are those assumptions violated? What are the possible impacts on the resulting conclusions?

Section 3.1, last sentence: Other possible contributors to differences could include slope, aspect, elevations of recharge, and other external factors.

Section 3.2.3: Was there any attempt to compare 9LA with Placer Creek. Milo and Placer Creeks have similar aspects to each other.

Section 3.3, last sentence: The stopes, raises, and transfer chutes, and other vertical structures may speed up travel through the underground workings. Recharge through fracture flow paths, and shallow alluvium may slow travel.

Section 4.0 It is unclear how much of the routing analysis is based on the previous development of synthetic hydrographs.

Section 4.0 2nd paragraph: Specify more clearly, which KT data are being used.

Section 4.1: Perhaps a reference to Table 3 earlier might be helpful.

Section 4.1, 2nd paragraph: 1.) Similar questions regarding the modeling approaches used - Several interpretation approaches were utilized on peak flow data. Are there any general guidelines regarding which approach is most reasonable? What are the physical characteristics of basins to which each approach is applied? What are the mathematical assumptions underlying each approach, and are those assumptions violated? What are the possible impacts on the resulting conclusions?

2.) The objectives of and logic behind this effort are not clearly developed.

Section 4.1, 2nd paragraph, last sentence: Is taking the mean a defensible approach in the context of the techniques that are being applied. Taking the mean sometimes masks important information concerning the variability of the system.

Section 4.1, 3rd paragraph: Were the distributions of KT and Pinehurst data, in fact, normal? If not, what are the possible implications on conclusions?

Table 3: Peak flows listed for water years 1995 through 1998 are meaningless. The mine operator was diverting water into the lower workings. Therefore, the timing and magnitude of peak flow cannot be determined. Are there any possible implications on conclusions?

If you have any questions or comments, please contact me at 208.773.5223. FAX number is the same, via automatic switching device.